Listing of Claims

1. (Currently Amended) A method of amplifying ~~an optical~~a polarized input beam ~~with a number of spaced, optical amplifier slabs, with the slabs having two opposed surfaces through which the beam is passed~~, comprising the steps of:

aligning at least four ~~amplifier~~ slabs spaced from adjacent slabs, each of the slabs having a thickness dimension of not more than ~~0.3~~1 centimeter, ~~spaced from adjacent slabs~~, wherein ~~the~~ slab surfaces of the at least four slabs are ~~rendered essentially non-reflective by being~~ placed within about 1 degree of the Brewster angle with respect to the polarized ~~optical~~ input beam, and ~~wherein~~ no two of the slab surfaces are within 0.1 degree of parallel with respect to each other;

optically pumping the at least four slabs; and

passing ~~a~~ the polarized input beam through the slab surfaces, wherein the polarized input beam is optically amplified in the at least four slabs., ~~and wherein the input beam is of an eye-safe wavelength, whereby controlling reflections and the use of multiple relatively thin slabs to reduce slab temperature greatly increases efficiency, and the high efficiency together with an eye-safe beam wavelength makes the system commercially practical for use outside of research laboratories.~~

2. (Currently Amended) The method of claim 1, ~~wherein the beam is passed through at least four slabs and passed within about 1 degree of a Brewster angle of the slab surfaces,~~ wherein half of the ~~slabs~~slab surfaces are ~~slanting~~ slanted in one

direction and half of the ~~slabs~~ slab surfaces ~~have~~ are slanted in an opposite ~~slant~~direction, ~~wherein using~~the opposite slanting ~~slabs~~ slab surfaces ~~avoids~~ being configured to control ~~beam~~ spreading ~~in of~~the an output beam.

3. (Currently Amended) The method of claim 1, wherein the at least four slabs ~~are~~ comprise Cr:YAG slabs.

4. (Currently Amended) The method of claim 1, ~~wherein~~ further including passing cooling fluid ~~is passed~~ between the at least four slabs.

5. (Currently Amended) The method of claim 1, wherein the slabs surfaces ~~being rendered~~include ~~essentially non-reflective by~~ dielectric surface coatings. ~~and by being placed within about 1 degree of the Brewster angle with respect to the polarized optical input beam.~~

6. (Currently Amended) The method of claim 1, ~~wherein~~ further including pumping the at least four slabs ~~are pumped directly by~~using pump diodes.

7. (Currently Amended) The method of claim 1, wherein ~~the beam is passed through the slabs within about 1 degree of a Brewster angle with all~~ the at least four slabs are tilted in ~~the~~ a same direction ~~and~~ such that a cross-sectional area of a line shaped beam is reduced during amplification. ~~a line-shaped beam is entered into the amplifier, and spread into an area during amplification, and the area of the output beam is then optically reduced.~~

8. (Currently Amended) The method of claim 1, wherein the polarized input beam has a

wavelength of between 1400 and 1800 nm.

9. (Currently Amended) The method of claim 1, wherein the thickness dimension is less than ~~2~~ 3 millimeters.

10. (Currently Amended) A method of amplifying ~~an~~ a polarized ~~optical~~ input beam ~~with a number of spaced, optical-amplifier slabs, with the slabs having two surfaces perpendicular to a thickness dimension~~, comprising the steps of:

aligning at least two optical-amplifier slabs separated by an intervening space, each optical-amplifier slab having two slab surfaces approximately parallel to each other and each optical-amplifier slab having a thickness dimension of less than one centimeter, ~~having a thickness dimension of less than one centimeter, with surfaces parallel to, and spaced from adjacent slabs, and with~~the slab surfaces being ~~rendered essentially non-reflective by being placed~~ disposed at ~~the~~ approximately a Brewster angle with respect to the ~~a~~ polarized optical input beam;

optically pumping the optical-amplifier slabs; and

passing the polarized input beam of an eye-safe wavelength through the slab surfaces ~~wherein the beam is optically amplified in the slabs~~to amplify the polarized input beam.

11. (Currently Amended) A method of amplifying an optical beam ~~with a number of spaced, optical-amplifier slabswith the slabs having two opposed surfaces~~, comprising the steps of:

aligning at least four optical-amplifier slabs, each of the optical-amplifier slabs

having two opposed slab surfaces that are substantially perpendicular to ~~having~~ a thickness dimension, the thickness dimension being ~~of~~ less than one centimeter, the slab surfaces of a first of the four optical-amplifier slabs being ~~substantially parallel~~slightly non-parallel to slab surfaces of an adjacent member of the four optical-amplifier slabs, and the first of the four optical-amplifier slabs being separated by an intervening space from the adjacent member of the four optical-amplifier slabs~~spaced from adjacent slabs~~, ~~wherein~~ the slab surfaces ~~are rendered~~being essentially non-reflective;

optically pumping the optical-amplifier slabs; and

passing ~~an input~~the optical beam through the slab surfaces ~~wherein~~ to amplify the optical beam, ~~is optically amplified in the slabs, and wherein~~ the ~~input~~ optical beam ~~is of~~being of an eye-safe wavelength.

12. (Currently Amended) The method of claim 11, wherein ~~no two~~the slab surfaces of the first of the four optical-amplifier slabs ~~of the slab surfaces~~ are ~~precisely~~ not within 0.1 degree of being parallel to each other and are not within 0.1 degree of being parallel to the slab surfaces of other members of the four optical-amplifier slabs.

13. (Currently Amended) The method of claim 11, wherein ~~the slabs have a~~ the thickness dimension of each optical-amplifier slab is~~of~~ less than 3 mm and a diameter of the slab surfaces is at least 5 mm.

14. (Currently Amended) The method of claim 11, wherein the optical beam has a wavelength ~~of~~ between 1400 and 1800 nm.

15. (Currently Amended) The method of claim 11, ~~wherein~~ further comprising pumping the at least four optical-amplifier slabs ~~are pumped directly by~~ using pump diodes.

16. (Currently Amended) The method of claim 11, wherein the optical beam is passed through the at least four optical-amplifier slabs ~~and passed~~ within about 1 degree of a Brewster angle of the slab surfaces, wherein half of the at least four optical-amplifier slabs are ~~slanting~~ slanted in one direction and half of the at least four optical-amplifier slabs ~~have an opposite slant~~are slanted in an opposite direction, ~~wherein~~ the~~using~~ opposite slanting half of the at least four optical-amplifier slabs being configured to control~~avoids beam~~ spreading ~~in~~of ~~the~~ an output beam.

17. (New) The method of claim 10, wherein the at least two optical-amplifier slabs are each wedge-shaped.

18. (New) An amplification system, comprising:

a plurality of wedge-shaped slabs each having a thickness dimension of less than 1 centimeter and two slab surfaces that are slightly non-perpendicular to a thickness dimension, the plurality of wedge-shaped slabs disposed such that facing slab surfaces of adjacent wedge-shaped slabs are slightly non-parallel and the wedge-shaped slabs are separated by an intervening volume;

a cooling fluid in the intervening volume between the adjacent wedge-shaped slabs; and

a polarized input beam passed through the slab surfaces of the wedge-shaped slabs near a Brewster angle.

19. (New) The amplification system of claim 18, wherein the slab surfaces include an anti-reflection surface coating.

20. (New) The amplification system of claim 18, wherein half of the slab surfaces of the wedge-shaped slabs are slanted in one direction and half of the slab surfaces of the wedge-shaped slabs are slanted in an opposite direction, the opposite slanting slab surfaces of the wedge-shaped slabs being configured to control spreading of an output beam.

21. (New) The amplification system of claim 18, wherein one of the slab surfaces of the wedge-shaped slabs includes a grating.

22. (New) The amplification system of claim 18, wherein the polarized input beam has a wavelength of between 1400 nm and 1800 nm.

23. (New) The amplification system of claim 18, wherein the thickness dimension of each wedge-shaped slab is less than 3 mm.